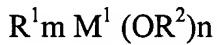


**IN THE CLAIMS:**

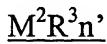
1. (Currently Amended) A photosensitive composition for volume hologram recording comprising an organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and an organometallic compound represented by the following general formula 2, or a hydrolyzed polycondensate of said organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and said organometallic compound, further a photopolymerization reactive compound and a photopolymerization initiator, wherein said organic-inorganic hybrid polymer is obtainable by copolymerizing at least an organometallic compound represented by the following general formula 1 and a monomer having an ethylenically unsaturated bonding:

General formula 1:



wherein  $M^1$  represents a metallic atom,  $R^1$  may be identical or different and represents a group having an ethylenically unsaturated bonding and containing 1-10 carbon atoms,  $R^2$  may be identical or different and is alkyl group containing 1-10 carbon atoms,  $m+n$  represents the number of valence of metal  $M^1$ ,  $m \geq 1$  and  $n \geq 1$ ,

General formula 2:



wherein  $M^2$  represents a metallic atom,  $R^3$  may be identical or different and is a halogen, an alkyl group, alkoxy group or acyloxy group containing 10 carbon atoms or less respectively or hydroxyl group, all or portion of these groups may be replaced with chelate ligand, and  $n'$  represents the number of valence of metal  $M^2$ .

2. (Cancelled) A photosensitive composition for volume hologram recording according to claim 1, wherein said composition further comprises an organometallic compound represented by the following general formula 2:

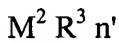
General formula 2:



wherein  $M^2$  represents a metallic atom,  $R^3$  may be identical or different and is a halogen, an alkyl group, alkoxy group or acyloxy group containing 10 carbon atoms or less respectively or hydroxyl group, all or portion of these groups may be replaced with chelate ligand, and  $n'$  represents the number of valence of metal  $M^2$ .

3. (Cancelled) A photosensitive composition for volume hologram recording according to claim 1, wherein said hydrolyzed polycondensate is a hydrolyzed polycondensate of said organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and an organometallic compound represented by the following general formula 2:

General formula 2:



wherein  $M^2$  represents a metallic atom,  $R^3$  may be identical or different and is a halogen, an alkyl group, alkoxy group or acyloxy group containing 10 carbon atoms or less respectively or hydroxyl group, all or portion of these groups may be replaced with chelate ligand, and  $n'$  represents the number of valence of metal  $M^2$ .

4. (Original) A photosensitive composition for volume hologram recording according to claim 1, wherein said composition further comprises a sensitizing pigment.

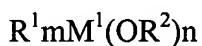
5. (Original) A photosensitive composition for volume hologram recording according to claim 1, wherein said photopolymerization reactive compound is a compound having an ethylenically unsaturated bonding capable of performing addition polymerization and said photopolymerization initiator is a photo-radical polymerization initiator.

6. (Original) A photosensitive composition for volume hologram recording according to claim 1, wherein said photopolymerization reactive compound is a compound capable of performing cationic polymerization and said photopolymerization initiator is a photo-cationic polymerization initiator.

7. (Previously Presented) A photosensitive medium for volume hologram recording, wherein a coating layer of a photosensitive composition for volume hologram recording according to any one of claim 1 is provided on a substrate.

8. (Currently Amended) A photosensitive medium for volume hologram recording, wherein a volume hologram recording material layer comprising a hydrolyzed polycondensate of an organic-inorganic hybrid polymer obtainable by copolymerizing at least an organometallic compound represented by the following general formula 1 and a monomer having an ethylenically unsaturated bonding and/or its hydrolyzed polycondensate and an organometallic compound represented by the following general formula 2, a photopolymerization reactive compound, and a photopolymerization initiator is provided on a substrate:

General formula 1:



wherein  $M^1$  represents a metallic atom,  $R^1$  may be identical or different and represents a group having an ethylenically unsaturated bonding and containing 1-10 carbon atoms,  $R^2$  may be identical or different and is alkyl group containing 1-10 carbon atoms,  $m+n$  represents the number of valence of metal  $M^1$ ,  $m \geq 1$  and  $n \geq 1$ ,

General formula 2:

$M^2R^3 n'$

wherein  $M^2$  represents a metallic atom,  $R^3$  may be identical or different and is a halogen, an alkyl group, an alkoxy group or an acyloxy group containing 10 carbon atoms or less respectively or a hydroxyl group, all or portion of these groups may be replaced with chelate ligand, and  $n'$  represents the number of valence of metal  $M^2$ .

9. (Cancelled) A photosensitive medium for volume hologram recording according to claim 8, wherein said hydrolyzed polycondensate contained in said volume hologram recording material layer is a hydrolyzed polycondensate of said organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and an organometallic compound represented by the following general formula 2:

General formula 2:

$M^2 R^3 n'$

wherein  $M^2$  represents a metallic atom,  $R^3$  may be identical or different and is a halogen, an alkyl group, an alkoxy group or an acyloxy group containing 10 carbon atoms or less respectively or a hydroxyl group, all or portion of these groups may be replaced with chelate ligand, and  $n'$  represents the number of valence of metal  $M^2$ .

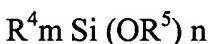
10. (Original) A photosensitive medium for volume hologram recording according to claim 8, wherein said volume hologram recording material layer further comprises a sensitizing pigment.

11. (Original) A photosensitive medium for volume hologram recording according to claim 8, wherein said photopolymerization reactive compound is a compound having an ethylenically unsaturated bonding capable of performing addition polymerization and said photopolymerization initiator is a photo-radical polymerization initiator.

12. (Original) A photosensitive medium for volume hologram recording according to claim 8, wherein said photopolymerization reactive compound is a compound capable of performing cationic polymerization and said photopolymerization initiator is a photo-cationic polymerization initiator.

13. (Original) A photosensitive composition for volume hologram recording comprising an organic-inorganic hybrid polymer which is obtainable by copolymerizing at least an organic silicon compound represented by the following general formula 3 and a monomer having an ethylenically unsaturated bonding and/or a hydrolyzed polycondensate of said organic-inorganic hybrid polymer, an organometallic particle which has a photopolymerization reactive group and is capable of exhibiting a refractive index different from that of hydrolyzed polycondensate of said organic-inorganic hybrid polymer when said organometallic particle is in a form of a polymer and a photopolymerization initiator:

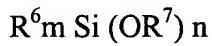
General formula 3:



wherein  $R^4$  may be identical or different and is a group having an ethylenically unsaturated bonding and containing 1-10 carbon atoms,  $R^5$  may be identical or different and is an alkyl group containing 1-10 carbon atoms,  $m+n=4$ ,  $m \geq 1$  and  $n \geq 1$ .

14. (Original) A photosensitive composition for volume hologram recording according to claim 13, wherein said composition further comprises an organic silicon compound represented by the following general formula 4:

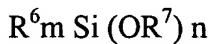
General formula 4:



wherein  $R^6$  may be identical or different and is an alkyl group containing 1-10 carbon atoms, or a hydrocarbon group containing 1-10 carbon atoms and having an alkoxy, a vinyl, an acryloyl, a methacryloyl, an epoxy, an amide, a sulfonyl, a hydroxyl or a carboxyl,  $R^7$  may be identical or different is an alkyl group containing 1-10 carbon atoms,  $m+n=4$ ,  $m \geq 1$ , and  $n \geq 1$ .

15. (Original) A photosensitive composition for volume hologram recording according to claim 13, wherein said hydrolyzed polycondensate is a hydrolyzed polycondensate of said organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and an organometallic compound represented by the following general formula 4:

General formula 4:

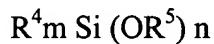


wherein  $R^6$  may be identical or different and is an alkyl group containing 1-10 carbon atoms, or a hydrocarbon group containing 1-10 carbon atoms and having an alkoxy, a vinyl, an acryloyl, a methacryloyl, an epoxy, an amide, a sulfonyl, a hydroxyl or a carboxyl,  $R^7$  may be identical or different and is an alkyl group containing 1-10 carbon atoms,  $m+n=4$ ,  $m \geq 1$ , and  $n \geq 1$ .

16. (Original) A photosensitive composition for volume hologram recording according to claim 13, wherein said composition further comprises a sensitizing pigment.
17. (Original) A photosensitive composition for volume hologram recording according to claim 13, wherein said organometallic particle is a compound having an ethylenically unsaturated bonding capable of performing addition polymerization as a photopolymerization reactive group and said photopolymerization initiator is a photo-radical polymerization initiator.
18. (Original) A photosensitive composition for volume hologram recording according to claim 13, wherein said organometallic particle is a compound having a cationic polymerization group as a photopolymerization reactive group and said photopolymerization initiator is a photo-cationic polymerization initiator.
19. (Previously Presented) A photosensitive medium for volume hologram recording, wherein a coating layer of a photosensitive composition for volume hologram recording according to any one of claim 18 is provided on a substrate.
20. (Original) A photosensitive medium for volume hologram recording, wherein a volume hologram recording material layer comprising a hydrolyzed polycondensate of an organic-inorganic hybrid polymer obtainable by copolymerizing at least an organic silicon compound represented by the following general formula 3 and a monomer having an ethylenically unsaturated bonding, and an organometallic particle which has a photopolymerization reactive group and is capable of exhibiting a refractive index different from that of hydrolyzed

polycondensate of said organic-inorganic hybrid polymer when said organometallic particle is in a form of a polymer and a photopolymerization initiator is provided on a substrate:

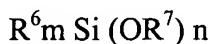
General formula 3:



wherein  $R^4$  may be identical or different and is a group having an ethylenically unsaturated bonding and containing 1-10 carbon atoms,  $R^5$  may be identical or different and is an alkyl group containing 1-10 carbon atoms,  $m+n=4$ ,  $m \geq 1$  and  $n \geq 1$ .

21. (Original) A photosensitive medium for volume hologram recording according to claim 20, wherein said hydrolyzed polycondensate contained in said volume hologram recording material layer is a hydrolyzed polycondensate of said organic-inorganic hybrid polymer and/or its hydrolyzed polycondensate and an organic silicon compound represented by the following general formula 4:

General formula 4:



wherein  $R^6$  may be identical or different and is an alkyl group containing 1-10 carbon atoms, or a hydrocarbon group containing 1-10 carbon atoms and having an alkoxy, a vinyl, an acryloyl, a methacryloyl, an epoxy, an amide, a sulfonyl, a hydroxyl or a carboxyl,  $R^7$  may be identical or different and is an alkyl group containing 1-10 carbon atoms,  $m+4=4$ ,  $m \geq 1$ , and  $n \geq 1$ .

22. (Original) A photosensitive medium for volume hologram recording according to claim 20, wherein said volume hologram recording material layer further comprises a sensitizing pigment.

23. (Original) A photosensitive medium for volume hologram recording according to claim 20, wherein said organometallic particle is a compound having an ethylenically unsaturated bonding capable of performing addition polymerization as a photopolymerization reactive group and said photopolymerization initiator is a photo-radical polymerization initiator.

24. (Original) A photosensitive medium for volume hologram recording according to claim 20, wherein said organometallic particle is a compound having a cationic polymerization group as a photopolymerization reactive group and said photopolymerization initiator is a photo-cationic polymerization initiator.

25. (Currently Amended) A photosensitive composition for volume hologram recording comprising a binder resin whose average molecular weight is in a range of 1,000-10,000 bonded to a metal selected from the group consisting of Ti, Zr, Sn and In, a photopolymerization reactive compound, and a Photopolymerization initiator.

26. (Original) A photosensitive composition for volume hologram recording according to claim 25, wherein said composition further comprises a sensitizing pigment.

27. (Original) A photosensitive composition for volume hologram recording according to claim 25, wherein said binder resin comprises an oligomer whose average molecular weight is in a range of 1,000-10,000.

28. (Original) A photosensitive composition for volume hologram recording according to claim 27, wherein said oligomer is a multifunctional epoxy compound having a hydroxyl group

or carboxyl group, and said composition further comprises an acid generation catalyst for epoxy hardening.

29. (Currently Amended) A photosensitive composition for volume hologram recording comprising a binder resin [having] containing a hydroxyl group [and or], a carboxyl group whose average molecular weight is in a range of 1,000-10,000, a metal chelate compound of a metal selected from the group consisting of Ti, Zr, Sn and In, a photopolymerization reactive compound, and a photopolymerization initiator.

30. (Original) A photosensitive composition for volume hologram recording according to claim 29, wherein said composition further comprises a sensitizing pigment.

31. (Original) A photosensitive composition for volume hologram recording according to claim 29, wherein said binder resin comprises an oligomer whose average molecular weight is in a range of 1,000-10,000.

32. (Original) A photosensitive composition for volume hologram recording according to claim 31, wherein said oligomer is a multifunctional epoxy compound having a hydroxyl group or carboxyl group, and said composition further comprises an acid generation catalyst for epoxy hardening.

33. (Currently Amended) A photosensitive medium for volume hologram recording, wherein a coating layer of a photosensitive composition for volume hologram recording comprising a

binder resin bonded to a metal, a photopolymerization reactive compound, and a photopolymerization initiator is provided on a substrate.

34. (Currently Amended) A photosensitive medium for volume hologram recording, wherein a coating layer of a photosensitive composition for volume hologram recording comprising a binder resin having a hydroxyl group or carboxyl group, a photopolymerization reactive compound, a metal chelate compound containing a metal atom having higher refractive index than the photopolymerization reactive compound, and a photopolymerization initiator is provided on a substrate.

35. (new) A photosensitive composition for volume hologram recording comprising a multifunctional epoxy compound having a hydroxyl group or a carboxyl group whose average weight is in a range of 1,000-10,000, a photopolymerization reactive compound, and a photopolymerization initiator.

36. (new) A use of a photosensitive composition for volume hologram recording comprising a binder resin bonded to a metal, a photopolymerization reactive compound, and a photopolymerization initiator.

37. (new) A method for preparing a volume hologram having a step of exposing a volume hologram material layer comprising a photosensitive composition, wherein the photosensitive composition comprises a binder resin bonded to a metal, a photopolymerization reactive compound, and a photopolymerization initiator.

38. (new) A photosensitive composition for volume hologram recording comprising a multifunctional epoxy compound having a hydroxyl group and/or carboxyl group whose average molecular weight is in a range of 1,000-10,000, a photopolymerization reactive compound, a metal chelate compound containing a metal atom having a higher refractive index than the photopolymerization reactive compound, and a photopolymerization initiator.

39. (new) A use of a photosensitive composition for volume hologram recording comprising a binder resin having a hydroxyl group and/or carboxyl group, a photopolymerization reactive compound, a metal chelate compound containing a metal atom having higher refractive index than the photopolymerization reactive compound, and a photopolymerization initiator.

40. (new) A method for preparing a volume hologram having a step of exposing a volume hologram material layer comprising a photosensitive composition, wherein the photosensitive composition comprises a binder resin having a hydroxyl group and/or carboxyl group, a photopolymerization reactive compound, a metal chelate compound containing a metal atom having higher refractive index than the photopolymerization reactive compound, and a photopolymerization initiator.